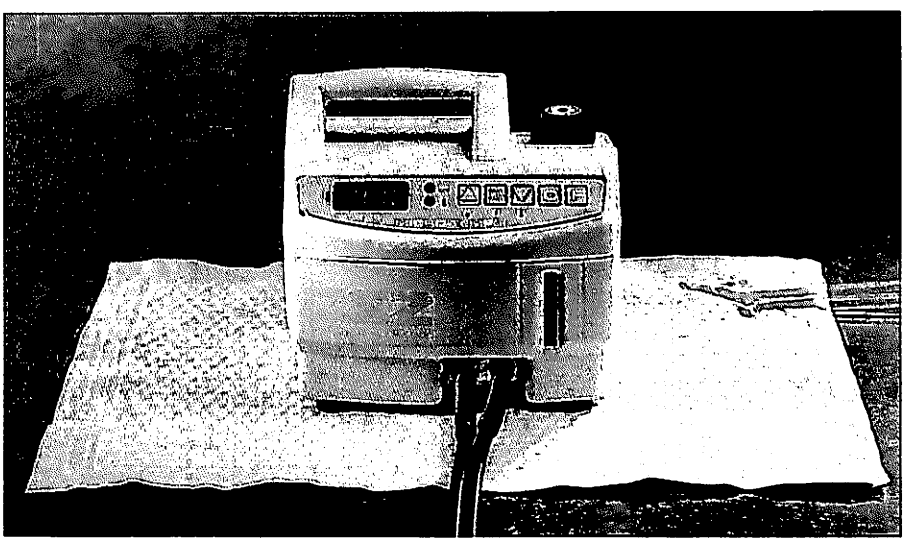
CST

OPERATION MANUAL

MICRO-TEMP® II



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1.0 Introduction

1.1 Purpose

The purpose of this manual is to provide operation and maintenance instructions for the *Micro-Temp II® II* Heat Therapy Pumps.

1.2 Clinical Indications

Localized heat/cold therapy has widespread clinical applications throughout the hospital. The primary indications for heat/cold therapy are as follows:

- Reduce edema
- Increase blood flow
- Prevent encrustation of tissue
- Enhance wound drainage
- Reduce skin irritation

Heat therapy is commonly used for the application of moist or dry heat to localized areas of the body. It is of particular benefit in orthopedic conditions such as lower back pain, strains, acute injuries, chronic pain, muscle spasm, tendonitis, and arthritis. Heat therapy is also prescribed for skin trauma (bruises, contusions, abscesses, boils, burns) and other medical problems like infection, phlebitis, I.V. infiltration, and neuritis.

Cold therapy is employed in the early stages of treatment for many of the same orthopedic conditions stated above. It involves the application of a dry pad with cold water circulating through it to the specific area of the body being treated. Headaches, particularly of a sinus nature, and nosebleeds are two other common indications for cold therapy.

Areas of use of heat/cold therapy in the hospital are:

- Medical/Surgical Floors
- Intensive Care Units
- Operating Rooms
- Emergency Rooms
- Post-Anesthesia Recovery
- Obstetrics
- Oncology
- Physical Therapy
- Out-Patient
- I.V. Therapy
- Orthopedics
- Renal Dialysis Units
- Newborn Nursery and Neonatal I.C.U.

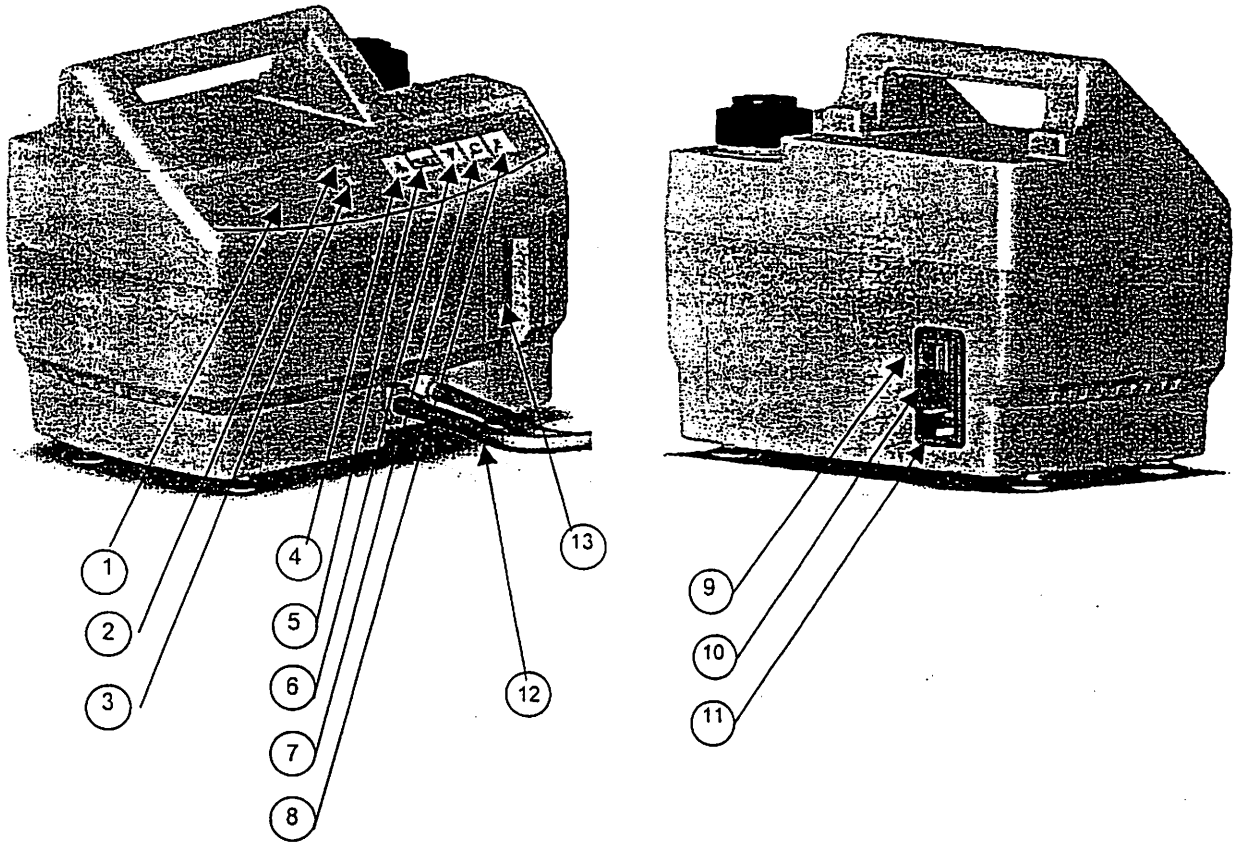
Heat and cold therapies are also used extensively outside the hospital—in physicians' offices, nursing homes, and in home healthcare.

1.3 Contraindications

Observe patient's skin condition frequently due to individual differences in sensitivity and susceptibility to injury from cold or heat and/or externally applied chemicals or pressure. Patients at greatest risk are those unconscious, on prolonged therapy, diabetics, children, and persons incapacitated or with insensitive skin or poor circulation.

1.4 Description

The *Micro-Temp II* Heat Therapy System has been designed to provide maximum thermal transfer efficiency at optimum safety. The *Micro-Temp II* utilizes a linear temperature controller featuring digital read-out of water and setpoint temperature selectable to indicate Centigrade or Fahrenheit. The temperature range is 20°- 41°C (68°-106°F). In addition to the features previously listed, this model includes audible alarms for over temperature and power failure along with visual indicators for heating and low water. Safety features include: linear control to ensure accuracy of temperature setting at all times by eliminating need for calibration; digital display of actual water temperature as well as setpoint temperature; a low water cut-off switch which shuts off both the heater and circulating pump; and an independent high limit sensor to guard against possible over-heating and subsequent patient injury.



1	Digital Temperature Display
2	Low Water Indicator Light
3	OverTemp Alarm Light
4	Increase Temperature Button
5	"SET" Temperature Button
6	Decrease Temperature Button
7	°C Button

8	°F Button
9	On Switch
10	Fuse Housing
11	Mains Power Connection
12	Attached Hose
13	Water Level Sight Glass

1.5 Accessories

The only essential accessory for the *Micro-Temp II* Unit is a thermal pad. Pads are available with or without a layer of foam bonded to one side and with a non-woven fabric on both sides to allow moist heat therapy when the foam or non-woven fabric is wetted. Pads are available in a variety of sizes.

Pads to be used with this product are MaxiTherm Lite® 870, 871, 872, 873; MaxiTherm® 273; TempPad 1215VY, 1215VF, 1621VF, 1824VF; PlastiPad Plus 193P.

Pads are connected to the pump via the attached eight-foot hose with "quick-connect" couplings featuring automatic shut-offs at each end. One-hand shut-off clamps are provided on the pad tubing to prevent leakage when disconnected from the hose. Other available accessories are as follows:

Part No.	Description
79400	•Floor Stand with Lock
79720	•Dual Pad Connecting Hose
79719	•Connecting Hose (CSZ Thermal Pad to Baxter K-Module)
79724	•Quick-Connect Couplings (Adapts Gaymar T-Pump Hose to CSZ Thermal Pad)

1.6 Incoming Inspection

Shipping cartons should be inspected upon receipt. If goods are damaged from shipping, make a claim immediately to the carrier.

1.7 Transporting and Storing

The *Micro-Temp II* unit can be transported via normal shipping methods via ground, air, or water when packaged in its approved packaging material. During transportation and storage, packaging should not be exposed to conditions in which the internal box temperature is below –10°F or above 150°F.

2.0 Set Up / Operation / Cleaning & Storage

2.1 Equipment Set Up

The *Micro-Temp II* unit should be placed on a secure, flat surface or on the mounting stand within proximity of the patient such that the attached hoses will reach the desired therapy site.

Press power switch to the "ON" position. The digital temperature display indicates the unit is on. The pump will now begin to circulate water. Allow ten to fifteen minutes for the water to reach selected temperature. Approximate time for the unit to heat from ambient (20°C) to 37°C is 8 minutes.

2.2 Alarm Verification

The alarm indicators of the *Micro-Temp II* can be checked manually via the Check-Out procedure in Section 4.4 of this manual. It is recommended that this procedure be performed initially to verify alarm indicators in addition to the regular preventive maintenance schedule for this product.

Alarm Condition	Error Code	Manual Section Reference
> 1°C Over Set Point	Actual Temp on Display Flashing + 2 audible beeps & red LED blinks (note: audible beeps & red LED flash to repeat in 9 minutes if unit does not return to set point)	4.4.8
High Temp Limit	42C on display + Constant Red LED + Constant audible alarm	4.4.7
Power Failure	Intermittent Red LED + Intermittent audible alarm	4.4.9
Low Water	Constant Yellow LED	4.4.4

2.3 Filling Instructions

Remove reservoir cap and fill reservoir to bottom of neck with cool ***distilled water*** only. Replace cap.

Select a CSZ Thermal Pad and insert the male couplings from the pad into the female couplings on the hose. Make sure couplings are locked together tightly. Check the clamps on the pad making sure they are fully open. The hose and pad must be free of kinks that might restrict flow.

Plug the power cord into a grounded receptacle providing the proper voltage and frequency. Press the power switch to the "ON" position and allow the pump to run for two minutes. Check water level and refill with cool distilled water if necessary. Turn pump off. Your *Micro-Temp II* Heat Therapy System is now ready to use.

Note: *Optimum operation is obtained when water level is visible in window. The low water cut-off switch will activate before the water level reaches the bottom of the window*

2.4 Setting Temperature

The *Micro-Temp II* Pump must be filled with water and connected to a pad before attempting to set temperature. (See Section 2.2)

Set temperature as follows:

1. Select Centigrade or Fahrenheit readout by pressing either the °C or °F switch.
2. Press and hold the "SET" switch.
3. While still depressing the "SET" button, press either the Increase or Decrease temperature button. When desired set temperature is displayed, release the "SET" switch.

To check setpoint temperature, press the "SET" symbol switch. The arrow keys may only be activated while this switch is held.

2.5 Pad Instructions

WARNING

- **A physician's order is required for setting temperature and use of equipment.** At least every 20 minutes, or as directed by physician, check patient's temperature and skin condition of areas in contact with blanket; also, check blanket water temperature. Pediatric, temperature-sensitive patients with vascular disease, and operating room patients should be checked more frequently. **Notify the physician promptly of any change, or if the patient's temperature is not responding properly, or does not reach the prescribed temperature in the prescribed time, or there is a change in the prescribed temperature range. Failure to inform the physician of the deviation may result in injury to the patient.**
- **Observe patient's skin condition frequently due to individual differences in sensitivity and susceptibility to injury from heat and/or externally applied chemicals or pressure. Patients at greatest risk are those unconscious, on prolonged therapy, diabetics, children, and persons incapacitated or with insensitive skin areas or poor circulation.**
- Prevent excessive and/or prolonged tissue pressure and shearing forces, especially over bony prominences, to prevent skin damage that may result.
- Do not place additional heat sources between the patient and blanket. **Skin damage may result.**
- Use of materials with good thermal conductivity such as water, gel and similar substances with the heating device not switched on may decrease the patient's body temperature.

- The area between the patient and the blanket should be kept dry to avoid injury to patient.
- **Do not wrap pad so tightly as to constrict blood flow. Do not use pins to secure pad or hoses. Do not allow pad or hoses to come in contact with any sharp object.**

CAUTION

- Do not operate pump without a pad connected or with pad clamps in the "CLOSED" position. Always check clamps to make sure they are fully open.
- Check hose couplings to be certain they are properly locked together.
- Make sure hose and pads are free of kinks that might restrict flow.
- Complete folding of pad may restrict flow and reduce therapy to patient.
- The pad surface should be checked for freedom from mechanical damage prior to each application.
- It may be necessary to retain the pad on the patient to ensure adequate contact is made with the patient to ensure maximum therapy is delivered.
- Full or partial covering of pads with materials with high insulative properties (pillows, etc.) could cause excessive retention of heat in the patient leading to injury.
- Follow Pad instructions and Hospital/Physician instructions for applying, storing, and disposal of product.

The *Micro-Temp II* has been designed and tested to be used with CSZ thermal pads. Use of non-CSZ manufactured pads may not produce the same results. CSZ pads allow maximum flow while resisting restriction or kinks. The unique foam-layered side or non-woven covered sides offer maximum patient comfort. This allows the pad to retain moisture for moist heat therapy.

2.5.1 Read and understand operation manual before connecting pad to heat therapy pump.

2.5.2 Connect pad to pump by inserting connectors on hose into connectors on pump. Connectors should "click" as they lock together.

2.5.3 Apply Temp-Pad to patient as prescribed by physician, and attach pad to hose by inserting connectors on pad into hose connectors. Normal use of the pad is to be applied in direct contact with the patient. Pad may be used over or under a patient, in the flat state or wrapped around patient.

2.5.4 Connectors should "click" as they lock together. Make sure clamps on tubing of pad are open.

2.5.5 Turn pump "ON" and set to temperature prescribed by physician.

2.5.6 After pad has filled, check water level in pump. Add distilled water, if necessary.

2.5.7 When therapy is no longer needed, turn pump "OFF". Unplug power cord from the outlet.

2.5.8 Close clamps on pad.

2.5.9 Disconnect pad from hose by depressing metal clips. Dispose of pad.

2.6 Disposal

Medical Devices that have come in contact with patients contain the risk of bio-contamination. This device generates no waste products or residues under normal use and normal cleaning routines. Follow State and Hospital guidelines regarding disposal of medical devices at the end of their useful lives.

2.7 Cleaning

The *Micro-Temp II* Pump case is constructed of plastic. Wipe outer surface with a cloth soaked in a solution of water and mild detergent. Rinse cloth of excess solution before applying to unit. Contact the Cincinnati Sub-Zero Technical Service Department for information on the Decontamination Cleaning procedure. Users should not use cleaning or decontamination methods different from those recommended by the manufacturer without first checking with the manufacturer that the proposed methods will not damage the equipment.

Reference methods for internal cleaning at end of manual.

2.8 Storage

The *Micro-Temp II* Pump may be stored full of water or empty for short-term storage (3 months or less). If long-term storage is contemplated, it is best to drain the pump. Contact the Cincinnati Sub-Zero Technical Service Department for the reservoir disinfection procedure.

3. Specifications

	Micro-Temp II Digital
Physical	***Model 747***
Size	9.75"w x 7"d x 8.5"h (24.765 cm W x 17.78 cm D x 21.59 cm H)
Weight	6.86 lbs. (3.11 kg)
Hose length	8 ft. (2.44 M)
Portability	Molded, attached, carrying handle
Connectors	quick-connect, self-sealing
Case Material	G.E. Cycoloy 6600 Plastic
Case Color	off-white
Control System	
Type	Microprocessor -controlled
Accuracy	±1°C (±1.7°F)
Setpoint Read-out	digital
Water Temp. Display	digital
Display Range	68°- 108°F (20°- 42°C)
Heating System	
Temperature Range 100-230V	68°- 106°F (20°- 41°C)
Heating Element	150W
Electrical System	
Voltage	**115V, 60Hz.**
Current	1.7 Amp.
Fuse	2 Amp
Fuse Type	¼" x 1 ¼" Time Delay
Voltage	**220/240V, 50/60Hz.**
Current	850 mA
Fuse	1 Amp
Fuse Type	5mm x 20 mm Time Delay
Votlage	**100V, 50/60Hz**
Current	1.7 A
Fuse	2 A
Fuse Type	¼" x 1 ¼" Time Delay
Power Cord	115V & 100V - 3 conductor, 16/18 AWG, 10' molded hospital grade plug 230 V – 3 x 1.00mm, 10A, 2.5 m
Leakage Current	under 50 microamps
Circulating System	
Reservoir Capacity	33 oz. (1000 ml)
Reservoir Fluid	distilled water
Fill Cap	vented
Flow Rate (thru pad)	10 GPH (38 LPH)
Water Level Indication	translucent window to reservoir
Low Water Cut-Off Switch	yes (heater and pump)
Storage	wet or dry
Safety System	
Overheat Protection	
Primary High Limit Sensor	42°C
Warning Lights	Over Temp and Low Water LED's
Audible Alarms	>1°C over Setpoint, High Limit, Power Failure
UL 2601-1 Listed	yes

Class I, Type BF applied part (with symbol),
ordinary locations, for continuous operation,

4.0 General Maintenance and Checkout Procedures

4.1 General

This section provides recommended preventive maintenance, checkout procedures, and calibration instructions for CSZ *Micro-Temp II* Pumps. A list of tools and equipment required for maintenance and checkout is in Table 4.2.

Maintenance and checkout procedures must be performed by qualified personnel, such as a certified biomedical electronic technician or a certified clinical engineer familiar with good practice for medical devices.

4.2 Fuse Replacement

Fuses are located in the power inlet module on the rear of the unit. To replace fuses, use a small straight screwdriver or similar device to pry open the cover on the switch. Pull out the fuse holder and inspect fuse. Replace fuse if necessary and re-insert the fuse holder in the connector. Ensure the arrows on the holders are in the same direction as indicated on the housing and close the cover.

4.3 Preventive Maintenance

A complete check of all *Micro-Temp II* Pump parameters should be made on a regularly scheduled basis. Frequency of checkout should follow your hospital's guidelines for this type equipment, usually at three to six month intervals. Emergency Care Research Institute (E.C.R.I.) recommends one major and one minor checkout per year at six-month intervals. CSZ suggests preventive maintenance every three months if possible.

The importance of properly documenting test results cannot be overstressed. Follow your hospital's inspection form or follow the sample form shown in Table 4.1.

4.4 Checkout Procedures

It is suggested you perform the following procedures in their order of listing and document the results on a Preventive Maintenance Inspection Record.

4.4.1 Exterior Physical Inspection

Look for cracked, bent, missing, or otherwise damaged parts. Carefully inspect the power cord for cuts or exposed wire. Check the plug for missing or bent pins. Remove the fuse and make sure it is the same type and rating as described on top of the unit.

4.4.2 Flow Test

Maximum flow rate is obtained with water temperature at 106°F/41°C and the pad laying flat on a smooth surface. If no flow rate is observed, check for reversed connections to pump, kinked pad or hose, clamps closed on pad, or couplings not properly seated and locked together. Allow water temperature to reach its maximum, and check flow rate. If less than 10 G.P.H. (38 L.P.H.), check pump and/or pad for restrictions. See **Trouble Shooting Guide, Section 5.**

4.4.3 **Temperature Test.** Set Temperature to 41°C. Let pump run 5 minutes to allow internal operating temperatures to stabilize before performing this test. Insert a digital or mercury thermometer 2 ½" below the bottom on the strainer. Record the temperature reading. The reading should be 41°C ± 1°C of reading on digital readout. Temperature swings should not exceed one degree Centigrade from minimum to maximum.

4.4.4 **Low Water Switch/Alarm Test.** To perform this test, first determine which tube on the pad returns water to the pump. (The left coupling on the pump is output, the right coupling, return.) Turn the pump off, clamp the return tube on the pad, disconnect from hose, and place end of tube from pad into a container capable of holding at least a pint of water. Release the clamp and turn pump on. If water does

not gush from pad tube, you have selected the wrong tube. As water level reaches the bottom of window area the pump and heater will shut off and the "LOW WATER" light will illuminate. Reconnect pad to hose and pour water back into reservoir. The pump should resume operation.

4.4.5 **Leakage Current Test.** Connect ground lead clamp of leakage current tester to the ground lug on the back of the unit. Plug pump into tester. Test unit in all combinations of power switch off and on, heater off and on, normal and reverse polarity, and normal and open ground. Record highest reading. If more than 50 microamperes, refer to Troubleshooting Guide, Section 5. Disconnect current leakage tester set-up. Unplug power from the unit.

4.4.6 **Ground Continuity Test.** Using an ohmmeter, measure the resistance between the pump mounting bracket and the ground pin of the power plug. This value shall not exceed 0.2 ohm. If higher than 0.2 ohm, see Troubleshooting Guide, Section 5.

4.4.7 **High-Limit Thermostat/Alarm Test.** With power turned off on unit, press and hold the C & F keys on the control membrane. Turn power to unit on while still depressing keys. Wait until an audible alarm sounds. Release buttons and immediately depress and release the C & F keys simultaneously. Press the set button and allow unit to run. Monitor temperature in reservoir above the heater—this will be the water volume that changes temperature the quickest. As soon as the control thermistor of the unit detects 42°C, the unit should alarm for overtemp. NOTE: If the Set button is depressed during this over-ride situation, the unit is turned off, or power is lost to the unit, the set temperature will automatically return to 41°C.

4.4.8 **>1°C Over Set Point Alarm Test.** With the power turned on and the unit holding a steady set point temperature, reduce the set point temperature by 2°C (3°F). Unit should alarm with 2 audible tones and 2 flashes of the red LED. Display temperature of the water will flash until temperature reaches the new setpoint. An alternate test method is to add water that is warmer than the setpoint temperature until the actual water temperature exceeds the set point by 2°C (3°F).

4.4.9 **Power Interruption Alarm Test.** With unit turned on, unplug the mains voltage from either the rear of the unit or at the power source. The unit should have an audible beep and flash the red LED for a minimum of ten minutes.

NOTE: Under normal conditions, it is not necessary to disassemble the unit since all test functions ca be performed externally. Contact customer service and support if it becomes necessary to disassemble unit.

Table. 4.1 Sample - Preventive Maintenance Inspection

Procedure	1/1/00	3/1/00	6/1/00	9/1/00
1. Exterior physical inspection	OK			
2. Flow test—Insert value	*10 GPH*			
3. Temperature test—Insert value	41°C			
4. Low water switch test	*OK*			
5. Leakage current test—Insert value	*50μA*			
6. Ground continuity test—Insert value	*.09Ω*			
7. Primary hi-limit thermostat test—Insert value	*42°C*			

5. Troubleshooting Guide

5.1 General

This section provides information to aid the service technician in diagnosing problems with the *Micro-Temp II* Heat Therapy Pump. The left column lists problems that could occur; the right column lists the most probable causes.

Problem	*Probable Cause*
Unit will not turn on.	1. Unit not plugged into proper voltage supply. 2. Blown fuse.
Unit turns on but will not pump	1. Improper connections to P.C. board. 2. Defective P.C. board(s).
Unit will heat but pump will not run.	1. Defective pump.
Pump runs but unit will not heat.	1. Defective P.C. board(s). 2. Defective heater.
Display will not illuminate.	1. Front panel connector disconnected or improperly connected to display P.C. board. 2. Defective high voltage P.C. board. 3. Defective CPU/display P.C. board assembly.
Low water warning light on.	1. Reservoir water level too low. 2 Defective P.C. board(s). 3. Unit tilted
Audible alarm sounds	1. Temperature readout indicates 42°C or higher. 2. Defective P.C. board(s).
Over temp warning light on.	1. Water used to fill pump too hot. 2. Defective P.C. board(s).
Ground continuity exceeds .2 ohm.	1. Loose or disconnected ground (green) wire(s). 2. Defective connector on ground wire. 3. Defective power cord.
Leakage current exceeds 100 microamperes.	1. Defective heater. 2. Defective pump. 3. Defective Power supply board

5.2 Alarm Indications

Alarm Condition	Error Code
> 1°C Over Set Point	Actual Temp on Display Flashing + 2 audible beeps & red LED blinks (note: audible beeps & red LED flash to repeat in 9 minutes if unit does not return to set point)
High Temp Limit	42C on display + Constant Red LED + Constant audible alarm
Power Failure	Intermittent Red LED + Intermittent audible alarm
Low Water	Constant Yellow LED
Temperature Sensor Failure	EE05 on display + constant Red LED + Constant audible alarm
Membrane keypad failure	EE07 on display + constant Red LED + Constant audible alarm
Microprocessor Failure	EE08 on display + constant Red LED + Constant audible alarm

6.0 Customer Service & Support

To obtain parts or additional information regarding your unit, write or phone:

MAIL: Cincinnati Sub-Zero Products, Inc.
12011 Mosteller Road
Cincinnati, OH 45241-1528
Attn: Customer Service

PHONE: 513-772-8810
1-800-989-7373

The following information is necessary to ensure prompt service:

- Model Number
- Serial Number
- Description of Part
- Part Number (If known)
- Quantity Desired
- Shipping Address
- Shipping Means (If any)

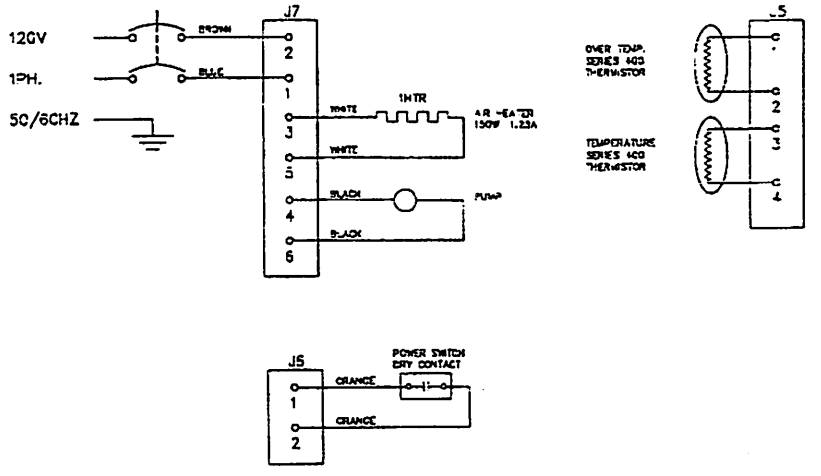
We strongly recommend that all repairs be done by properly trained staff.
CSZ will make available on request information which will assist the user's qualified service personnel to repair those parts of the equipment which are designated by the manufacturer as repairable.

To qualify for credit, warranty parts should be tagged with the following information:

1. The invoice number under which the unit/part was purchased.
2. Cause of failure.
3. Serial Number of Unit.
4. Date of installation or purchase.
5. *RMA Number.

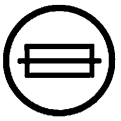
* You must first obtain an RMA number by calling the factory prior to returning an item.

WIRING HARNESS -- CIRCUIT BOARD CONNECTIONS



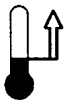
7.0 Symbols

Temperature Set


Fuse

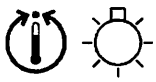
Caution: Read Operation Instructions and Manual Before Operating

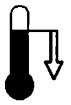
Water Temperature


Increasing Temperature

Disconnect Power Before Servicing

Type BF Equipment


Temp. Set Point Indicator


Decreasing Temperature

Risk of Explosion: Do not use in the Presence of Flammable Anesthetics

Danger; Risk of Electric Shock

FLUID CIRCUIT DISINFECTION/DRY STORAGE PROCEDURE
for Circulating Water Units Utilizing Airkem® A-33®

The following procedure disinfects the fluid circuit in these products. If the product is to be placed back into service, stop after step #8. For protracted storage in a dry state, complete the procedure. The required tools/supplies are appropriate drain hose(s) and/or hose connector(s), a source of compressed air/nitrogen, Airkem® A-33® Disinfectant Packets, distilled water, and the appropriate AC electrical power.

1. Prepare distilled water/ A-33 solution in the volume needed to fill the unit's reservoir(s). Solution must be in the ratio of one packet of A-33 per gallon of distilled water. Set aside for later use.

2. Turn unit **OFF**.

3. Drain the water from the reservoir as described in the Technical Manual for the unit.

4. Flush unit:

    a). Fill the reservoir with solution prepared in step #1.
    b). Turn unit **ON**, set to heat to 100°F (38°C), and circulate for 5 minutes.
    c). Drain unit as instructed in the Technical Manual for the unit.
    d). Repeat steps 4.a - c. 3 times.

5. **If unit is to be returned to service**, replenish reservoir(s) with the appropriate volume of distilled water.

6. **If unit is being placed in dry storage,** continue with procedure.

7. When all fluid has been removed from the unit, disconnect the drain hose(s) and wipe unit clean.

8. Unit is now ready for storage.

When you are ready to return unit to service, replenish the reservoir(s) with distilled water. Perform all the checks as described in the respective Operation and Technical Manual.

Airkem and A-33 are registeed trademarks of Ecolab Inc.

(OPTIONAL METHOD)
FLUID CIRCUIT DISINFECTION/DRY STORAGE PROCEDURE
for Circulating Water Units Utilizing Household Bleach (Sodium Hypochlorite)

The following procedure disinfects the fluid circuit in these products. If the product is to be placed back into service, stop after step #9. For protracted storage in a dry state, complete the procedure. The required tools/supplies are appropriate drain hose(s) and/or connector(s), a source of compressed air/nitrogen, a supply of household bleach (sodium hypochlorite), Fac-Chek pH strips, distilled water, and the appropriate AC electrical power.

1. Turn unit OFF.

2. Drain the water from the reservoir as described in the Technical Manual for the unit.

3. Flush unit:
   a). Prepare a 9:1 solution of water and sodium hypochlorite (9 parts water and 1 part sodium hypochlorite). Fill reservoir with solution.
   b). Turn unit **ON**, set to heat to 100°F (38°C), and circulate for 5 minutes; for cooling units, set to cool to 50°F (10°C) and circulate for 5 minutes.
   c). Drain unit as instructed in the Technical Manual for the unit.
   d). Repeat steps 3.a - c. 3 times.

4. Rinse unit three (3) times as described in Steps 3 a-c above, using **distilled water only.**

5. Fill reservoir(s) with distilled water and circulate.

6. Check the water with Fac-Chek pH strips or other appropriate mehod for detecting bleach. If bleach is detected, repeat steps 5 and 6.

7. When you no longer detect any bleach, drain reservoir.

8. **If unit is to be returned to service,** replenish reservoir(s) with the appropriate volume of distilled water.

   If unit is being placed in dry storage, continue with procedure.

9. Re-connect the drain hose and drain all the fluid from the unit as in step #3 above, leaving drain hose attached.

10. When all fluid has been removed from the unit, disconnect the drain hose(s) and wipe unit clean.

11. Unit is now ready for storage.

When you are ready to return unit to service, replenish ther reservoir(s) with distilled water. Perform all the checks as described in the respective **Operation and Technical Manual.**

SUGGESTIONS FOR PROTECTING THE RESERVOIR FROM BACTERIA

If sterile water is used and changed monthly, there should be no problem with bacteria forming in the reservoir or blanket(s). If hospital procedures require the use of a bacteriostatic or bactericidal agent, we suggest Hospital-Approved Bactericidal Agents which are non-acidic and non-foaming.

NOTE:Do not use De-Ionized or Reverse Osmosis Processed Water. The majority of de-ionizers do not maintain a neutral pH of 7. If the de-ionized water is acidic, it will cause a battery effect and the copper refrigeration line will begin to deteriorate and cause a leak in the refrigeration system.

SUGGESTED DECONTAMINATION GUIDELINES FOR CINCINNATI SUB-ZERO EQUIPMENT

(Developed in conjunction with the risk management department at the Shriners Burn Institute in Cincinnati, Ohio)

Decontamination in the Healthcare environment is of the utmost concern with today's array of potential infectious diseases. Cincinnati Sub-Zero has always been aware of these concerns in conjunction with the water reservoirs and circulatory systems of CSZ equipment. For this reason, all CSZ equipment have a suggested monthly schedule for flushing and cleaning the water system in an effort to inhibit the growth of bacteria and fungi.

The following decontamination procedure was developed to effectively rid the water system of all bacteria and not damage any of the internal components of the equipment. All Steps should be followed as closely as possible. This decontamination procedure should be conducted every three (3) months.

The Procedure:

1. Drain the water reservoir of your CSZ unit as described in Section 3.2.

2. Flush the unit three (3) times per the following procedure.

   A. Add one (1) ounce (30 cc) of household bleach (sodium hypochlorite) to the empty water reservoir.

CAUTION

It is strongly suggested that appropriate eye protection and gloves be worn when handling and using bleach. Wearing an apron is also suggested to protect clothing.

B. Fill the reservoir with warm tap water.
C. Turn the unit on and circulate per the chart below.

UNIT	MODE	TEMPERATURE	DURATION
MicroTemp II	Heating	37°C	5 Min.

D. Drain the unit after each flush.

3. Rinse the unit three (3) times as described in (2) except to omit the household bleach (sodium hypochlorite).

4. After the third rinse, drain the unit and add 32 ounces (1 liter) of distilled water to the water reservoir and circulate.

5. Check the water with "Fac-Chek" pH strips or other appropriate test method for detecting bleach. If bleach is detected, repeat steps 2 B, C, and D.

6. Once no bleach is detected, add the appropriate amount of U.S.P. Grade Propylene Glycol to the water reservoir per the following chart:

UNIT	U.S.P. GRADE PROPYLENE GLYCOL PER UNIT
MicroTemp II	2 ounces (50 cc)

7. Continue to fill the water reservoir with distilled water.

8. Document the maintenance of the unit.

9. The unit is now ready to be placed back in service.